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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jee Ho Kim

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EXAMINER

CONLEY, OI K

ART UNIT

PAPER NUMBER

1726

NOTIFICATION DATE

DELIVERY MODE

01/10/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/557,511	Applicant(s) KIM ET AL.	
	Examiner HELEN O.K. CONLEY	Art Unit 1726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicants' amendments have been received on October 25, 2010 . Claims 1, 5, have been amended. Claims 2, 4, 7, 9, 12 have been amended..
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action.

Claims Analysis

3. For the purposes of compact prosecution the term “a pattern” is found on Page 7 of Applicants specification and will be interpreted as such.
4. It is noted that claims 1 and 5 are product-by-process claims. “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since coating is the same as to that of the Applicant’s invention, Applicant’s process is not given patentable weight in this claim.

Claim Rejections - 35 USC § 102

5. The rejections under 35 U.S.C 102(b), anticipated by Yoshida et al. on claims 1, 5, 6 are withdrawn because the Applicants amended the claims.
- 6.

Claim Rejections - 35 USC § 102/103

7. The rejections under 35 U.S.C. 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. 103 (a) as obvious over Yoshida et al., on claims 2, 7, 10 are withdrawn because the Applicants amended or cancelled the claims.

Claim Rejections - 35 USC § 103

8. The rejections under 35 U.S.C. 103 (a) as obvious over Yoshida et al. in view of Maruo et al., on claims 4, 9, 12 are withdrawn because the Applicants amended or cancelled the claims

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 5, 6 are rejected under 35 U.S.C. 103(a) as unpatentable over Yoshida et al. (EP 0982790) in view of Michio et al. (JP 10-289732).

Regarding claims 1, 5, the Yoshida et al. reference discloses a battery separator coated with gel polymer (P29, P53, P54) about 60% (P27; Applicant's over 40-60%) of the total separator area based on a surface of the separator to be coated with the gel polymer. The separator is partially coated with a gel polymer in which coated or non-coated areas from a pattern (Fig. 2).

The Yoshida et al. reference discloses that the thickness of the gel polymer adhesive comprising voids with depths of 10 microns or less or several microns or less in order to reduce ion conduction resistance between the active layer and the separator (P28). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to choose the instantly claimed value through process optimization, since it has been held that the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable values involve only routine skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980). In the event that the combination does not teach the thickness of the depth of the adhesive layer with sufficient specificity, it would have been obvious, absent a showing of criticality or unexpected results.

Furthermore, the Yoshida reference discloses using a thermoplastic adhesive that is susceptible to short-circuit the battery to prevent thermal runaway or heat generating abnormalities. It is silent in specifying a gel polymer is selected from the group consisting of polyvinylidene fluoride. However, the Michio reference discloses thermoplastic gel polymer consisting of polyvinylidene fluoride in conventional batteries and are ion conductors (P5) that provides adhesion between the anode/separator and cathode/separator interface. The Michio reference also discloses at high temperatures the polyvinylidene fluoride is easily influenced or the polyvinylidene fluoride easily melts at high temperatures (P6-9). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate polyvinylidene fluoride that melts at high temperatures while providing ion conductivity conventionally as disclosed by the Michio reference for the battery that requires a thermoplastic adhesive

Art Unit: 1726

in between the anode/separator interface and cathode/separator interface that requires short-circuiting in order to provide safety precautions in case of temperature abnormality.

The Yoshida et al. reference discloses the claimed invention above and further incorporated herein. It is noted that claims 1 and 5 are product-by-process claims. “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since coating is the same as to that of the Applicant’s, Applicant’s process is not given patentable weight in this claim.

Regarding claim 6, the Yoshida et al. reference discloses a lithium battery comprising an electrode assembly comprising a positive terminal and an aluminum laminated film (Example 1, Fig. 7). The Yoshida et al. reference discloses a pattern formed that provides void pattern and no void patterns (Applicant’s partially coated by coating and non-coated areas).

Response to Arguments

11. Applicant's arguments filed 10/25/10 have been fully considered but they are not persuasive. Applicants' principal arguments are:

a. In regards to Applicants' argument pertaining to the claims being rejected as anticipatory over Yoshida and unpatentable over Yoshida in view of Maruo has been considered but are moot in view of the amended claims.

b. The Applicants argue, "The instant Specification discloses that "[i]n a rechargeable lithium battery having the structural features claimed in the instant claims, a path for discharging gases generated from electrode reactions is provided by the presence of the claimed pattern, and thus, it is possible to prevent the gases from being trapped between each electrode and a separator so that an electrode assembly is maintained in a stable form and does not deform due to pressure build\~ up. In this way, it is possible to prevent premature deterioration of electrodes, thereby improving the battery life." Specification, p. 7, lines 17-19; alternatively, see paragraphs [0015]-[0018]; [0032]-[0035] and Fig. 7 of the instant Specification published as US Patent Application Publication No. US 2007/0054183). It will be appreciated that the swellability and gel morphology are thus critical features of the polymer used in the instant claims." However, "swellability and gel morphology" have been considered but are moot because the recitations are unclaimed, thus have not been given patentability.

Applicant's argue, "*Furthermore, Yoshida and Maruo fail to disclose the specific combination of (i) a regularly patterned gel polymer layer in the range of 40-60%*

of a total separator area, and (ii) a uniformly formed and relatively thin gel polymer layer coated by a gravure coating method.” If the Applicants are arguing that the Yoshida reference does not teach a regularly patterned gel polymer layer. The term “regularly” is a relative term and is interpreted by the Examiner that any pattern is also regular. Again, the method of “coated by a gravure coating method” is product-by-process claim limitation. “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since coating is the same as to that of the Applicant’s, Applicant’s process is not given patentable weight in the claim. In addition, Page 8 of Applicants’ specification discloses “spray coating” and “gravure coating” to be an equivalent method. The Yoshida reference also teaches spray coating.

c. The Applicants' argue, “*Comparative Example 2 (dipping method) and Comparative Example 3 (gravure method) are shown. Although these comparative data are concerned with a gel polymer totally coated on the separator, these experimental data show that a dipping method is better than the gravure coating method in terms of the discharging property shown in Figure 7. In view of these results, the combination of (i) regularly patterned gel polymer*

layer and (ii) a uniformly formed and relatively thin gel polymer layer coated by a gravure coating method is an unexpectedly advantageous feature.” However the Applicants admitted that the dipping method is better than the gravure coating method, therefore it is unclear how the gravure coating method comprises unexpected advantageous features. Also, these results are not applicable to the claimed invention because these results are to fully coated gel polymers and not partially coated gel polymers.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELEN O.K. CONLEY whose telephone number is (571)272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Helen O.K. Conley/
Examiner, Art Unit 1795